

# ANALYTICAL REPORT

## PREPARED FOR

Attn: Terri Choy

AECOM

1001 Bishop Street

Honolulu, Hawaii 96813

Generated 1/30/2023 12:00:18 PM

## JOB DESCRIPTION

Red Hill - AFFF CTO N6274223F0104

## JOB NUMBER

580-122533-1

# Eurofins Seattle

## Job Notes

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The data in the report relate to the field sample(s) as received by the laboratory and associated QC. All results have been reviewed and have been found to be compliant with laboratory and accreditation requirements, with the exception of the noted deviation(s). For questions, please contact the Project Manager.

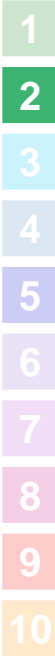
The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Northwest, LLC Project Manager.

## Authorization



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# Case Narrative

Client: AECOM  
Project/Site: Red Hill - AFFF CTO N6274223F0104

Job ID: 580-122533-1

**Job ID: 580-122533-1**

**Laboratory: Eurofins Seattle**

## Narrative

### CASE NARRATIVE

Client: AECOM

Project: Red Hill - AFFF CTO N6274223F0104

Report Number: 580-122533-1

This case narrative is in the form of an exception report, where only the anomalies related to this report, method specific performance and/or QA/QC issues are discussed. If there are no issues to report, this narrative will include a statement that documents that there are no relevant data issues.

It should be noted that samples with elevated Reporting Limits (RLs) resulting from a dilution may not be able to satisfy customer reporting limits in some cases. Such increases in the RLs are an unavoidable but acceptable consequence of sample dilution that enables quantification of target analytes within the calibration range of the instrument or that reduces the interferences thereby enabling the quantification of target analytes.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

### RECEIPT

Two samples were received on 1/21/2023 9:45 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.4° C.

Note: All samples which require thermal preservation are considered acceptable if the arrival temperature is within 2C of the required temperature or method specified range. For samples with a specified temperature of 4C, samples with a temperature ranging from just above freezing temperature of water to 6C shall be acceptable. Samples that are hand delivered immediately following collection may not meet these criteria, however they will be deemed acceptable according to NELAC standards, if there is evidence that the chilling process has begun, such as arrival on ice, etc.

### GLYCOLS

**Samples AF-RHMW06-WGN01LF-2301WK3 (580-122533-1) and AF-RHMW04-WGN01LF-2301WK3 (580-122533-2) were analyzed for glycols in accordance with EPA SW-846 Method 8015B - DAI.** The samples were analyzed on 01/25/2023 and 01/26/2023.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

## Definitions/Glossary

Client: AECOM

Project/Site: Red Hill - AFFF CTO N6274223F0104

Job ID: 580-122533-1

### Qualifiers

#### GC Semi VOA

Qualifier	Qualifier Description
U	Undetected at the Limit of Detection.

### Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

# Client Sample Results

Client: AECOM

Job ID: 580-122533-1

Project/Site: Red Hill - AFFF CTO N6274223F0104

**Client Sample ID: AF-RHMW06-WGN01LF-2301W3**

**Lab Sample ID: 580-122533-1**

**Date Collected: 01/19/23 11:11**

**Matrix: Water**

**Date Received: 01/21/23 09:45**

**Method: SW846 8015C GLY - Glycols- Direct Injection (GC/FID)**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
2-(2-Butoxyethoxy)ethanol	3.0	U	5.0	1.1	mg/L			01/26/23 20:44	1

# Client Sample Results

Client: AECOM

Job ID: 580-122533-1

Project/Site: Red Hill - AFFF CTO N6274223F0104

**Client Sample ID: AF-RHMW04-WGN01LF-2301W3**

**Lab Sample ID: 580-122533-2**

**Date Collected: 01/19/23 10:05**

**Matrix: Water**

**Date Received: 01/21/23 09:45**

**Method: SW846 8015C GLY - Glycols- Direct Injection (GC/FID)**

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
2-(2-Butoxyethoxy)ethanol	3.0	U	5.0	1.1	mg/L			01/25/23 22:26	1

# QC Sample Results

Client: AECOM  
Project/Site: Red Hill - AFFF CTO N6274223F0104

Job ID: 580-122533-1

## Method: 8015C GLY - Glycols- Direct Injection (GC/FID)

Lab Sample ID: MB 680-760613/10

Matrix: Water

Analysis Batch: 760613

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
2-(2-Butoxyethoxy)ethanol	3.0	U	5.0	1.1	mg/L			01/25/23 20:53	1

Lab Sample ID: LCS 680-760613/6

Matrix: Water

Analysis Batch: 760613

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
2-(2-Butoxyethoxy)ethanol	20.0	18.2		mg/L		91	50 - 150

Lab Sample ID: LCSD 680-760613/7

Matrix: Water

Analysis Batch: 760613

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
2-(2-Butoxyethoxy)ethanol	20.0	18.2		mg/L		91	50 - 150	0	50

Lab Sample ID: MB 680-760776/10

Matrix: Water

Analysis Batch: 760776

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
2-(2-Butoxyethoxy)ethanol	3.0	U	5.0	1.1	mg/L			01/26/23 20:21	1

Lab Sample ID: LCS 680-760776/6

Matrix: Water

Analysis Batch: 760776

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
2-(2-Butoxyethoxy)ethanol	20.0	20.2		mg/L		101	50 - 150

Lab Sample ID: LCSD 680-760776/7

Matrix: Water

Analysis Batch: 760776

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
2-(2-Butoxyethoxy)ethanol	20.0	21.6		mg/L		108	50 - 150	7	50

Lab Sample ID: 580-122533-1 MS

Matrix: Water

Analysis Batch: 760776

Client Sample ID: AF-RHMW06-WGN01LF-2301W3

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
2-(2-Butoxyethoxy)ethanol	3.0	U	20.0	17.8		mg/L		89	50 - 150

Lab Sample ID: 580-122533-1 MSD

Matrix: Water

Analysis Batch: 760776

Client Sample ID: AF-RHMW06-WGN01LF-2301W3

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
2-(2-Butoxyethoxy)ethanol	3.0	U	20.0	16.2		mg/L		81	50 - 150	10	50

Eurofins Seattle



# Lab Chronicle

Client: AECOM  
Project/Site: Red Hill - AFFF CTO N6274223F0104

Job ID: 580-122533-1

**Client Sample ID: AF-RHMW06-WGN01LF-2301W3**

**Lab Sample ID: 580-122533-1**

**Date Collected: 01/19/23 11:11**

**Matrix: Water**

**Date Received: 01/21/23 09:45**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8015C GLY		1	760776	DBM	EET SAV	01/26/23 20:44

**Client Sample ID: AF-RHMW04-WGN01LF-2301W3**

**Lab Sample ID: 580-122533-2**

**Date Collected: 01/19/23 10:05**

**Matrix: Water**

**Date Received: 01/21/23 09:45**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8015C GLY		1	760613	GEM	EET SAV	01/25/23 22:26

## Laboratory References:

EET SAV = Eurofins Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

# Accreditation/Certification Summary

Client: AECOM  
Project/Site: Red Hill - AFFF CTO N6274223F0104

Job ID: 580-122533-1

## Laboratory: Eurofins Savannah

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2463	09-22-24
The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.			
Analysis Method	Prep Method	Matrix	Analyte
8015C GLY		Water	2-(2-Butoxyethoxy)ethanol

# Sample Summary

Client: AECOM

Project/Site: Red Hill - AFFF CTO N6274223F0104

Job ID: 580-122533-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-122533-1	AF-RHMW06-WGN01LF-2301W3	Water	01/19/23 11:11	01/21/23 09:45
580-122533-2	AF-RHMW04-WGN01LF-2301W3	Water	01/19/23 10:05	01/21/23 09:45

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Ver: 01/16/2019

5755 8th Street East  
Tacoma, WA 98424



Environment Testing  
America

[illegible]

Ver: 01/16/2019

## Chain of Custody Record

<b>Client Information</b>		Sampler: <b>NOAH TURNER</b>		Lab Pk#: <b>Elaine Walker</b>		Carrier Tracking No(s): <b>FedEx</b>		COC No: <b>2301W3AFE09</b>	
Client Contact:		Phone: <b>(781) 366-4777</b>		E-Mail: <b>M.Elaine.Walker@EurofinsET.com</b>		State of Origin: <b>Hawaii</b>		Page: <b>Page 1 of 1</b>	
Company: <b>AECOM</b>		PWSID: <b></b>		Analysis Requested		Total Number of Containers: <b>3</b>		Job #: <b></b>	
Address: <b>1001 Bishop St, Suite 1600</b>		Due Date Requested: <b>see subcontract</b>		Field Filtered Sample (Yes or No): <b>8015C, DAL, GL, DS, Z-2-butoxyethoxy-ethanol</b>		Special Instructions/Note: <b></b>		Preservation Codes:	
City: <b>Honolulu</b>		TAT Requested (days): <b>Rush - ASAP</b>		Perform MS/MSD (Yes or No): <b></b>		Special Instructions/Note: <b></b>		A HCL B NaOH C Zn Acetate D Nitric Acid E NaHSO4 F MeOH G Ascorbic Acid H TSP Dodecahydrate I Ice J DI Water K EDTA L-EDTA Z- other (specify)	
State, Zip: <b>Hawaii 96813</b>		Compliance Project: <b>Δ Yes Δ No</b>		Field Filtered Sample (Yes or No): <b></b>		Special Instructions/Note: <b></b>		M - Hexane N None O - AsNaO2 P - Na2O4S Q - Na2SO3 R Na2SO3 S H2SO4 T- TSP Dodecahydrate U Acetone V- MCAA W- pH 4.5 Z- other (specify)	
Phone: <b>808-954-4512 / 770-331-0794</b>		PO #: <b></b>		Sample Date: <b>01-19-2023</b>		Sample Time: <b>1111</b>		Sample Type: <b>G=grab</b>	
Email: <b>Watson.Tanji@eurofins.com / Mark.Kromis@eurofins.com</b>		WO #: <b></b>		Sample Date: <b>01-19-2023</b>		Sample Time: <b>1111</b>		Sample Type: <b>G=grab</b>	
Project Name: <b>CTO N6274223F0104</b>		SSOW#: <b></b>		Sample Date: <b>01-19-2023</b>		Sample Time: <b>1111</b>		Sample Type: <b>G=grab</b>	
Site: <b>RHSF</b>				Sample Date: <b>01-19-2023</b>		Sample Time: <b>1111</b>		Sample Type: <b>G=grab</b>	
Sample Identification: <b>AF-RHMW06-WGN01LF-2301W3</b>				Sample Date: <b>01-19-2023</b>		Sample Time: <b>1111</b>		Sample Type: <b>G=grab</b>	
Possible Hazard Identification: <b>Non-Hazard</b>				Sample Date: <b>01-19-2023</b>		Sample Time: <b>1111</b>		Sample Type: <b>G=grab</b>	
Deliverable Requested: <b>I II III IV Other (specify)</b>				Sample Date: <b>01-19-2023</b>		Sample Time: <b>1111</b>		Sample Type: <b>G=grab</b>	
Empty Kit Relinquished by: <b>NOAH TURNER</b>				Sample Date: <b>01-19-2023</b>		Sample Time: <b>1111</b>		Sample Type: <b>G=grab</b>	
Relinquished by: <b>Miranda DeGarmo</b>				Sample Date: <b>01-19-2023</b>		Sample Time: <b>1111</b>		Sample Type: <b>G=grab</b>	
Relinquished by: <b>Miranda DeGarmo</b>				Sample Date: <b>01-19-2023</b>		Sample Time: <b>1111</b>		Sample Type: <b>G=grab</b>	
Custody Seals Intact: <b>Δ Yes Δ No</b>				Sample Date: <b>01-19-2023</b>		Sample Time: <b>1111</b>		Sample Type: <b>G=grab</b>	
Custody Seal No: <b>2-4</b>				Sample Date: <b>01-19-2023</b>		Sample Time: <b>1111</b>		Sample Type: <b>G=grab</b>	